GMS 6853: Improvement and Implementation Science in the Learning Health System

Department of Health Outcomes and Biomedical Informatics

University of Florida College of Medicine

Semester: Spring 2023

Time: Thursdays 10:40am-12:35pm

Location: Zoom videoconference

Credits: 3

Instructor: Jennifer H. LeLaurin, PhD, MPH

Malachowsky Hall #7122

(352) 294-5993; jlelaurin@ufl.edu

Office hours: by appointment

COURSE DESCRIPTION

Quality improvement and implementation of evidence-based practices are critical for addressing gaps in the delivery and effectiveness of health care. Translating research into practice is a complex process that involves engagement from multiple stakeholders, which facilitates the adoption of evidence-based interventions into health care and contributes to the sustainability of interventions. Implementation science seeks to: (1) understand the barriers and facilitators that influence successful implementation of effective interventions, (2) design strategies to foster the adoption of best practices, and (3) enhance the extent to which intervention research is generalizable, representative, and ultimately scalable. Combined with implementation science, more rigorous dissemination efforts beyond traditional academic venues are needed to increase outreach into real-world settings.

This course provides a framework for examining improvement and implementation science and its application to clinical research. Because improvement and implementation science are rooted in real-world settings, the focus of the course is twofold:

- First, the course focuses on **examining different study designs in improvement and implementation science**, and the strengths and limitations of different approaches.
- Second, the course provides **real-world experience** for the students by pairing them with a researcher and a topic expert to design an improvement and implementation science approach and dissemination activities that address a real-world clinical concern.

To meet these objectives, students will develop an implementation science proposal that addresses a real-world clinical challenge, in consultation with a researcher and a topic expert. Topic experts may include a collaborating clinician, community agency/group representative, technical expert, or Citizen Scientist. Students already conducting research that could benefit from improvement and implementation science may choose to select their own topics and collaborators. Students may also select topics through the Clinical and Translational Science Institute (CTSI) Learning Health System-Implementation Science (LHS-IS) Program, the Quality Improvement Project Registry (QIPR), or other UF Health initiatives. The engagement of researchers is essential to ensure that the appropriate scientific expertise is available to guide

the development of the proposal. The engagement of topic experts is essential to ensure that the proposal effectively addresses critical health issues facing patients.

During the course, the students will develop their projects in consultation with their selected researcher and topic expert and engage in didactic videoconference discussion sessions. At the end of the semester, students will present their projects to the class. Study collaborators, members of the CTSI leadership team, UF Health, and Faculty Group Practice will be invited to attend and provide feedback on the final presentations.

AUDIENCE

The course is designed for advanced masters-level and doctoral-level students in health outcomes, biomedical informatics, medicine, public health, and other health professions, as well as advanced students in public policy, sociology, psychology or other social sciences with plans for a career in health research. Prerequisites are GMS 6851 (*Fundamentals of Dissemination and Implementation Research*) and permission of the instructor.

COURSE GOALS

The primary goals of this course are to enhance students': 1) knowledge of improvement and implementation science; 2) ability to critically evaluate studies focused on improvement and implementation science; and 3) real-world experience in designing an implementation science study. More specifically, students who successfully complete the course will be able to:

1. Discuss the theoretical underpinnings of improvement and implementation science,
2. Explain barriers and facilitators to implementation and dissemination of research findings and methods to address those barriers,
3. Describe the major categories of study designs that are used in conducting improvement and implementation science and strategies for engaging key stakeholders, and including clinicians and policymakers, in the research process,
4. Describe the importance of contextual factors and assessing multiple outcomes when designing improvement and implementation science studies, and
5. Critically evaluate improvement and implementation science studies by assessing the strengths and limitations of the study design and measures selected for informing health care decision-making in real world settings.

METHODS OF INSTRUCTION

This course will operate as an advanced graduate seminar, with students taking an active role in initiating and leading discussions and presenting their implementation science study progress. Attendance and active participation in all class discussions is required and will be evaluated as part of the student's grade for the course. Students must read the required readings prior to each session.

Discussion sessions and presentations will take place during scheduled class times using Zoom. There is no in-person component to this course. Several lectures have been recorded and uploaded to the course Canvas site; students are expected to view these lectures prior to the discussion session for which they are assigned. Some weeks include live lectures from the instructor and guest lecturers.

Reading Assignments and Class Discussions

Students must read the assigned readings before each discussion session and be prepared to discuss their reactions, thoughts, analysis, comments, and questions on the main issues raised in the readings. Share what strikes you as new, unexpected, or significant. Discuss the

implications of that reading for your scientific work. All students are expected to participate in each discussion session. <u>Attendance and participation in discussion is worth 20% of your grade</u>.

Discussion Lead

As <u>10% of your final grade</u>, each student will lead the discussion of selected peer-reviewed journal articles during the semester. To receive full credit for your discussion lead assignment, you must participate as a discussion lead on at least two of these weeks during the semester (leading discussion on no more than one paper each week).

Quizzes

Two quizzes will comprise <u>5% of your grade.</u>

ASSIGNMENTS

Term Paper / Proposal Development

Students will develop a written implementation science proposal in collaboration with a researcher and a topic expert. The proposal is worth <u>25% of your grade</u> and will contain the following sections:

1) Specific aims
2) <u>Research strategy</u>, including (a) significance, (b) innovation, and (c) approach
3) <u>Practical and ethical considerations</u>, including (a) human subjects consideration and (b) data sharing and dissemination plans

Detailed guidelines for proposal development will be provided in Canvas.

Consultations with Topic Experts

For their semester proposal assignment, students are encouraged to select researchers and topic experts with whom they already have an established working relationship. This allows students to build upon their own graduate thesis or dissertation work, or the work of their mentors and advisors, and develop an implementation science strategy that has the potential to enhance existing projects. For students who do not have their own topics, resources will be provided in the first two weeks of the course for identifying potential implementation science topics that are important to UF Health clinicians, Citizen Scientists, and researchers.

Students will complete a graded consultation assignment, which involves a videoconference consultation with their topic expert, and includes a PowerPoint presentation and interview guide that will be used during the consultation, and meeting notes that will be submitted after the consultation. The consultation assignments comprise 25% of your grade. To assist students in understanding what to expect from this collaboration, the following guidelines are provided.

1. Students will prepare a PowerPoint presentation to discuss with the topic expert that describes the purpose, aims and suggested interventions to promote the uptake of evidence-based best practices. The consultation PowerPoint presentation comprises <u>10% of your grade</u>.
2. Students will develop an interview guide to solicit feedback from the topic expert about: 1) adaptations that should be considered before the protocol could be implemented in a clinical or community setting, 2) barriers that may be encountered, and 3) strategies that could facilitate implementation. The interview guide comprises <u>10% of your grade</u>.

3. Students are expected to spend 1-2 hours total during the semester (scheduled at a time most convenient for the topic expert) to present their proposal to the topic expert, conduct the interview, and obtain feedback. Week 10 has been set aside for the consultation, although students may conduct the consultation prior to this.
4. Students will prepare consultation meeting notes (2 to 3 pages), which will comprise <u>5% of your grade</u>.

Note: For any papers or presentations that are developed from this work, the topic expert should be included as one of the authors.

The decision of which type of topic expert to collaborate with depends on the specifics of the proposed project. For projects that address implementation of a clinical intervention, a clinician collaborator specializing in the appropriate field is recommended. Projects that involve a high level of interaction with patients or community members will benefit most from collaboration with a Citizen Scientist. Projects that address community-level interventions will benefit from collaboration with a leader or representative from a community agency or organization. Projects that propose a technical implementation strategy (e.g., new EHR functionality) will benefit from collaboration with an expert specializing in the specified technology.

Final Presentation guidelines

The final presentation is worth <u>15% of your grade</u>. You should prepare a well-designed set of slides in a PowerPoint file, which you will use during your presentations. Design each visual carefully to illustrate the main points. You are expected to work with the researcher and topic expert with whom you are collaborating to develop your presentation, and also invite them to attend your presentation. It is not expected that your collaborators attend the presentations if their other professional commitments do not permit their attendance.

EVALUATION AND GRADING

Grades will be based on quizzes (5%), attendance and participation in discussions (20%); discussion lead assignment (10%), consultation assignment (25%), implementation science proposal (25%), and final presentation (15%). All deadlines must be met. Any assignment turned in after the deadline will receive one grade below what it would have earned had it been submitted on time.

Grades will be assigned as follows:

Letter Grade	Grade Points	Grade Percentage
A	4.0	95-100
A-	3.67	90-94
B+	3.33	87-89
B	3.0	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.0	73-76

C-	1.67	70-72
D+	1.33	67-69
D	1.0	63-66
D-	.67	60-62
E	0	59 and below

For additional grading policy information, you may visit the undergraduate catalog web page at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

COURSE POLICIES AND RESOURCES
Students are expected to adhere to the following course policies.

Class Attendance

Class attendance is required. Excused absences follow the criteria of the UF Graduate Catalog (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor before the missed class day when possible. University of Florida rules require attendance during the first two course sessions, and students must attend both course sessions of student presentations for this class. Missing more than three scheduled sessions will result in a failure. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Finally, students must read the assigned readings *prior to* the class meetings and be prepared to discuss the material. For more information, please visit:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

CANVAS

Course information, readings, lectures, and grades are available on Canvas at http://lss.at.ufl.edu/. You must have a Gatorlink account to log on. *You will access the web site on a weekly basis to access readings, and to view assigned lecture videos (during weeks when videos are assigned).*

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at: learning-support@ufl.edu or by calling (352) 392-HELP - select option 2. Additional information is available at: https://lss.at.ufl.edu/help.shtml

Online Participation

This course follows an online format in which students and the instructor attend weekly discussion sessions remotely using videoconference technology (e.g., Zoom). At the beginning of the semester, the instructor will provide information for accessing weekly discussions via videoconference. The videoconference technology also includes functions that allow students to conduct their consultations and make their final presentations remotely.

Class Decorum

Please be on time and respect others' points of view. Please listen quietly when others are speaking, and turn off cell phones, alarms, and other such distractions.

Diversity Statement

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

Returned Assignments

Keep copies of all assignments that you submit and of all grades until you receive official notification of your final course grade.

Policy on Make-Up Work

Students are allowed to make up work only as the result of illness or other unanticipated circumstances. In the event of such an emergency, documentation will be required in conformance with university policy. Work missed for any other reason will earn a grade of zero.

Accommodations for Students with Disabilities

Students requiring accommodations must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student who must then provide this documentation to the faculty member when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Mental Health Services

Please visit the UF counseling center website for information regarding appointments: https://counseling.ufl.edu/ or call (352)392-1575

UF Police Department

For Campus Police, please call the UF Police Department at (352)392-1111

For **all** emergencies and medical assistance, please call 911.

COURSE EVALUATION
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/.

TEXTBOOK
Brownson, R.C., Colditz, G.A. & Proctor, E.K. (Eds). Dissemination and Implementation Research in Health: Translating Science to Practice, 2nd Edition. New York: Oxford University Press, 2017.

SCHEDULE OF TOPICS AND READINGS

Week 1: January 11 – Introductory Session

Resources for identifying project topics and local clinical and research collaborators will be discussed during Week 1. Students will sign up for their discussion lead assignments for the semester.

Week 2: January 18 – Improvement and implementation science in the learning health system

Lectures: Posted in Canvas

Readings:

- Chapter 1: The promise and challenges of dissemination and implementation research
- Chapter 2: Terminology for dissemination and implementation research
- Chambers DA, Feero WG, Khoury MJ. Convergence of Implementation Science, Precision Medicine and the Learning Health Care System: A new Model for Biomedical Research. JAMA. 2016 May 10;315(18):1941-2. doi: 10.1001/jama.2016.3867.
- Trinkley KE, Ho PM, Glasgow RE, Huebschmann AG. How dissemination and implementation science can contribute to the advancement of learning health systems. Academic Medicine. 2022 Sep 23;97(10):1447-58.
- Kilbourne AM, Goodrich DE, Miake-Lye I, Braganza MZ, Bowersox NW. Quality Enhancement Research Initiative Implementation Roadmap: Toward Sustainability of Evidence-based Practices in a Learning Health System. Medical Care. 2019; 57(10)-Suppl 3: S286-S293.
- Vilendrer, S, Saliba-Gustafsson, EA, Asch, SM, et al. Evaluating clinician-led quality improvement initiatives: A system-wide embedded research partnership at Stanford Medicine. Learn Health Sys. 2022; 6(4): e10335. doi:10.1002/lrh2.10335.

- Optional:
    - Shojania KG, Grimshaw JM. Evidence-Based Quality Improvement: The State of the Science. Health Affairs. 2005; 24(1): 138-150. doi: 10.1377/hlthaff.24.1.138.

Week 3: January 25 – Study design in dissemination and implementation research

Lectures: Posted in Canvas

Readings:

- Chapter 13: Design and analysis in dissemination and implementation research.
- Liang S, Kegler MC, Cotter M, et al. Integrating evidence-based practices for increasing cancer screenings in safety net health systems: a multiple case study using the Consolidated Framework for Implementation Research. Implementation Science: IS. 2016; 11:109. doi:10.1186/s13012-016-0477-4.
- Green BB, Coronado GD, Schwartz M, Coury J, Baldwin LM. Using a continuum of hybrid effectiveness-implementation studies to put research-tested colorectal screening interventions into practice. Implementation Science. 2019 Dec;14:1-9.

- Zgierska AE, Robinson JM, Lennon RP, et al. Increasing system-wide implementation of opioid prescribing guidelines in primary care: findings from a non-randomized stepped-wedge quality improvement project. BMC Family Practice. 2020; 21:245.
- Balasubramanian BA, Heurtin-Roberts S, Krasny S, Rohweder CL, Fair K, Olmos-Ochoa TT, Stange KC, Gorin SS; MOHR Study Group. Factors Related to Implementation and Reach of a Pragmatic Multisite Trial: The My Own HealthReport (MOHR) Study. J Am Board Fam Med. 2017 May-Jun;30(3):337-349. doi: 10.3122/jabfm.2017.03.160151.

Week 4: February 1 – Qualitative and mixed methods in implementation science

Lecture: Posted in Canvas

Readings:

- Chapter 20: Mixed Methods Evaluation in Dissemination and Implementation Science
- National Cancer Institute. 2018. Qualitative Methods in Implementation Science. https://cancercontrol.cancer.gov/IS/docs/NCI-DCCPS-ImplementationScience-WhitePaper.pdf
- Hamilton AB, Cohen AN, Glover DL, et al. Implementation of Evidence-Based Employment Services in Specialty Mental Health. Health Services Research. 2013; 48(6), Part II: 2224-2244.
- Shaw RJ, Kaufman MA, Bosworth HB, et al. Organizational factors associated with readiness to implement and translate a primary care-based telemedicine behavioral program to improve blood pressure control: the HTN-IMPROVE study. Implementation Science: IS. 2013; 8:106. doi:10.1186/1748-5908-8-106.
- Gale RC, Wu J, Erhardt T, Bounthavong M, Reardon CM, Damschroder LJ, Midboe AM. Comparison of rapid vs in-depth qualitative analytic methods from a process evaluation of academic detailing in the Veterans Health Administration. Implementation Science. 2019 Dec;14(1):1-2.

Assignments:

- Proposal topics and collaborators must be selected by the beginning of class in Week 4. Time will be set aside during class for you to present your topic idea and collaborators and receive initial feedback from the instructor and fellow students.

Week 5: February 8 – Choosing implementation strategies

Lecture: Posted in Canvas

Readings:

- Chapter 15: Implementation Strategies
- Waltz TJ, Powell BJ, Fernandez ME, et al. Choosing implementation strategies to address contextual barriers: diversity in recommendations and future directions. Implementation Science. 2019; 14(1): 42.
- Salbach NM, MacKay-Lyons M, Solomon P, et al. The role of theory to develop and evaluate a toolkit to increase clinical measurement and interpretation of walking speed and distance in adults post-stroke. Disability and Rehabilitation. 2021; doi: 10.1080/09638288.2020.1867653

- Schroeck FR, Ould Ismail AA, Haggstrom DA, Sanchez SL, Walker DR, Zubkoff L. Data-driven approach to implementation mapping for the selection of implementation strategies: a case example for risk-aligned bladder cancer surveillance. Implementation Science. 2022 Sep 1;17(1):58.

Assignments:

- Start/Stop/Continue Survey is due by 10:00 AM on Wednesday, February 7th.

Week 6: February 15 – Measurement and evaluation approaches for dissemination and implementation research

Lecture: Posted in Canvas

Readings:

- Chapter 14: Measurement Issues in Dissemination and Implementation Research
- Chapter 19: Evaluation approaches for dissemination and implementation research.
- D'Angelo H, Ramsey AT, Rolland B, et al. Pragmatic application of the RE-AIM Framework to evaluate the implementation of tobacco cessation programs within NCI-designated cancer centers. Frontiers in Public Health. 2020; 8: 221. doi: 10.3389/fpubh.2020.00221.
- Glasgow RE, Gaglio B, Bennett G, et al. Applying the PRECIS Criteria to Describe Three Effectiveness Trials of Weight Loss in Obese Patients with Comorbid Conditions. Health Services Research. 2012; 47(3, Part 1).
- Torres LM, Camarena AE, Martin A, Shah R. Examining Implementation Outcomes of Sit Down and Play, a Primary Care-Based Intervention, in a Large Urban Primary Care Clinic. Maternal and Child Health Journal. 2021; 25: 1744-1756.

Week 7: February 22 – Adaptations

Lecture: Posted in Canvas

Readings:

- Chapter 17: Adaptation in Dissemination and Implementation Science
- Baumann AA, Domenech Rodríguez MM, Amador NG, Forgatch MS, Parra-Cardona JR. Parent Management Training-Oregon model (PMTO™) in Mexico City: Integrating cultural adaptation activities in an implementation model. Clinical Psychology: Science and Practice. 2014 Mar;21(1):32.
- Wiltsey Stirman S, La Bash H, Nelson D, Orazem R, Klein A, Sayer NA. Assessment of modifications to evidence-based psychotherapies using administrative and chart note data from the US department of veterans affairs health care system. Frontiers in Public Health. 2022 Nov 15;10:984505.
- Holtrop JS, Gurfinkel D, Nederveld A, Phimphasone-Brady P, Hosokawa P, Rubinson C, Waxmonsky JA, Kwan BM. Methods for capturing and analyzing adaptations: implications for implementation research. Implement Sci. 2022 Jul 29;17(1):51. doi: 10.1186/s13012-022-01218-3. PMID: 35906602; PMCID: PMC9335955.

Week 8: February 29 – Special topics: The Learning Health System at UF

Lecture: In-class guest lecture

Readings:

- Lteif C, Eddy E, Terrell J, Cavallari LH, Malaty J, Duarte JD. Feasibility of Preemptive Pharmacogenetic Testing and Improvement of Medication Treatment Satisfaction among Medically Underserved Patients. Clinical and Translational Science. 2023 Nov 27.
- Theis RP, Blackburn K, Lipori G, Harle CA, Alvarado MM, Carek PJ, Zemon N, Howard A, Salloum RG, Shenkman EA. Implementation context for addressing social needs in a learning health system: a qualitative study. Journal of Clinical and Translational Science. 2021;5(1):e201.
- Duarte JD, Dalton R, Elchynski AL, Smith DM, Cicali EJ, Lee JC, Duong BQ, Petry NJ, Aquilante CL, Beitelshees AL, Empey PE. Multisite investigation of strategies for the clinical implementation of pre-emptive pharmacogenetic testing. Genetics in Medicine. 2021 Dec;23(12):2335-41.

Assignments:

- Consultation PowerPoint slides and interview guide are due 10:00 AM on Thursday, February 29th.

Week 9: March 7 – Special Topics: Artificial Intelligence and Implementation Science

Lecture: Posted in Canvas

Readings:

- Shaw J, Rudzicz F, Jamieson T, Goldfarb A. Artificial intelligence and the implementation challenge. Journal of medical Internet research. 2019 Jul 10;21(7):e13659.
- Gama F, Tyskbo D, Nygren J, Barlow J, Reed J, Svedberg P. Implementation frameworks for artificial intelligence translation into health care practice: scoping review. Journal of Medical Internet Research. 2022 Jan 27;24(1):e32215.
- Michie, S., Thomas, J., Johnston, M. et al. The Human Behaviour-Change Project: harnessing the power of artificial intelligence and machine learning for evidence synthesis and interpretation. Implementation Sci 12, 121 (2017). https://doi.org/10.1186/s13012-017-0641-5

No session: March 14 – Spring Break

Week 10 – No session: March 21 – Student independent study and consultations with experts

Assignments:

- Students will make their presentations to topic experts and conduct their interviews.
- Consultation meeting notes are due by 10:00 AM on Thursday March 21st.

Week 11: March 28 – Special topics

Week 11 will focus on late-breaking topics. The instructor will select topics with input from students.

Week 12: April 4 – Final student presentations, day 1

Final presentations will be detailed – 25 minutes, plus 5 minutes for questions for each student. Presentations will follow the main topics described in the students' written proposals, focusing on aims, research strategy, and practical/ethical considerations.

Assignments:

- Presentation slides are due by 10:00 AM on Thursday, April 4th.

Week 13: April 11 – Final student presentations, day 2

Final presentations will be detailed – 25 minutes, plus 5 minutes for questions for each student. Presentations will follow the main topics described in the students' written proposals, focusing on aims, research strategy, and practical/ethical considerations.

No class: April 18th and 25th (UF Reading/Examination Days)

Final written proposals are due by 8:00 AM on Thursday, April 25th

This syllabus is subject to change at the instructor's discretion to meet the needs and goals of the course. Revisions will be announced in class and/or on Canvas.